

PATENT SPECIFICATION

(11) 1 538 857

(21) Application No. 26682/75 (22) Filed 24 June 1975

(23) Complete Specification filed 8 Sept. 1976

(44) Complete Specification published 24 Jan. 1979

(51) INT CL² C11D 3/00 3/14 3/16

(52) Index at acceptance

C5D 6A5C 6A6 6A8C 6B12G2A 6B12L 6B12M 6B12N1 6B15
6B3 6B4 6B5 6B7 6B8 6C9(72) Inventors DAVID PRICE and
ROBERT SIDNEY HODSON

(54) CLEANING COMPOSITIONS

(71) We, CIBA-GEIGY (UK) LIMITED, a British Company whose Registered Office is: 30, Buckingham Gate, London SW1E 6LE, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to the cleaning of lavatory bowls or urinals and more particularly to a cleaning block which may be immersed in the flushing water of the cistern.

Lavatory bowls may be cleaned by adding a cleaning agent manually to the water trapped in the bowl. However, this is not satisfactory due to the infrequency with which the cleaning agent is added and also due to the fact that substantially all the cleaning agent is removed when the bowl is flushed.

In another method of cleaning lavatory bowls a container of a water-impervious material containing the cleaning agent in a dense paste or solid form is immersed in the cistern and cleaning of the lavatory bowls takes place automatically on flushing: however, if the cleaning agent is not enclosed in a water-impervious container it would dissolve too rapidly in the water of the cistern and be used up much too quickly.

It is known that by incorporating a hydrophobic material which may or may not have surfactant properties, the solubility rate of the cleaning agent is reduced to such an extent that a water impervious container is rendered unnecessary and the cleaning agent can be immersed directly in the water of the cistern.

Dyestuffs are usually added to such cleaning agents for two major reasons:

(1) the presence of dye in the cleaning agent has the effect of imparting a pleasing and clean appearance to the water in the lavatory bowl and

(2) the absence of colour in the flushing water indicates that the composition is exhausted. 50

Pigments tend to be more substantive than dyestuffs and therefore dyestuffs rather than pigments are used to colour such cleaning agents because they are generally non-substantive and compositions containing them do not stain the sides of the bowl after flushing. However dyestuffs have the following disadvantages: 55

1. The colour tends to run out before the cleaning agent is exhausted 60

2. If a chlorine-releasing bleaching agent is used as the disinfectant in the composition, the colour is quickly removed from the dyestuff. 65

We have surprisingly found that if instead of a dyestuff, a suitably dispersed pigment is added to the cleaning composition, the colour of the composition lasts longer than with a dyestuff, a chlorine-releasing bleaching agent can be used because it does not so readily remove the colour from pigments and in addition, the composition does not stain the sides of the bowl after flushing. 70

According to the present invention there is provided a composition for cleaning lavatory bowls or urinals which comprises:

a) from 1% to 95% by weight, calculated on the total weight of the composition, of a hydrophobic agent or mixture of hydrophobic agents, 80

b) from 5% to 95% by weight calculated on the total weight of the composition of a hydrophilic surfactant or mixture of hydrophilic surfactants as hereinafter defined, 85

c) from 0 to 35% by weight calculated on the total weight of the composition, of a disinfectant or mixture of disinfectants which is compatible with the constituents of the composition, and 90

d) from 1 to 15% by weight calculated on the total weight of the composition, of a pigment suitably dispersed throughout at least components a) and b) of the composition. 95

The hydrophobic agent has no substantial disinfectant properties and is preferably present in an amount of from 5% to 60%. The use of a biodegradable hydrophobic agent provides an advantage of preservation of part of the natural environment after use.

Examples of hydrophobic agents that may be used are as follows:

Aliphatic and aromatic hydrocarbons such as waxes e.g. paraffin waxes, microcrystalline waxes, antural waxes such as beeswax and carnuba wax:

Hydrocarbon oils or naphthalene or anthracene:

Water insoluble or substantially insoluble carboxylic acids containing at least 12 carbon atoms such as stearic acid and lauric acid.

Water insoluble esters of acids such as fatty acids or aromatic acids, for example, diethyl phthalate or dibutyl phthalate:

Substituted aromatic hydrocarbons such as chlorinated hydrocarbons for example paradichlorobenzene:

The hydrophobic agent may also be one or more of the following:

alcohols containing more than 8 carbon atoms: low ethoxylate of alkyl phenol containing on average up to 8 ethylene oxide units per mole low ethoxylate of an aliphatic alcohol, containing from 8 to 24 carbon atoms in the chain and containing on average up to 8 ethylene oxide units per mole such as cetyl stearyl alcohol with an average of 6 ethylene oxide units per mole.

alkanolamides of fatty acids in which the fatty acid moiety of the alkanolamide preferably contains from 8 to 20 carbon atoms per molecule for example coconut monoethanolamide and coconut diethanolamide.

The hydrophilic surfactant is preferably used in an amount of from 20% to 95% by weight calculated on the total weight of the composition. By "hydrophilic surfactant" is meant a compound falling within the categories (1), (2), (3), (4) or (5) below

(1) A straight or branched chain alkyl aryl sulphonate, a fatty alcohol sulphate or a fatty alcohol ether sulphate. The straight or branched chain alkyl aryl sulphonate may contain from 8 to 22 carbon atoms in the alkyl group. Examples of suitable alkyl aryl sulphonates are sodium or ammonium salts of sulphonated dodecyl benzene, tridecyl benzene sulphonic acids or alkylnaphthalene sulphonic acids. Suitable fatty alcohol sulphates are alkali metal or ammonium salts of lauryl sulphate. Suitable fatty alcohol ether sulphates are alkali or ammonium salts of lauryl ether sulphate.

(2) An ethoxylate of a fatty alcohol wherein the ethoxylate moiety contains

more than 16 ethylene oxide units per mole. Examples of these are lauryl alcohol ethoxylates, cetyl alcohol ethoxylates, oleyl alcohol ethoxylates or commercially available mixtures of these ethoxylates.

(3) A polyoxyethylene alkyl phenol containing greater than 14 ethylene oxide units per mole, for instance an ethoxylated nonylphenol containing from 15 to 100 ethylene oxide units per mole.

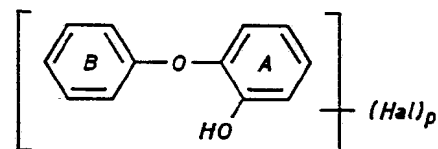
(4) An ethoxylate of a fatty acid monoalkanolamide containing more than 14 ethylene oxide units per mole, for example an ethoxylated coconut monoethanolamide containing more than 14 moles of ethylene oxide.

(5) An ethylene oxide-propylene oxide co-polymer for instance co-polymers sold under the Trade Mark Monolan.

The amount of disinfectant present in the composition is preferably from 0 to 5% by weight calculated on the total weight of the composition.

The disinfectant should be compatible with the other ingredients of the composition and may be a bleaching agent such as a stable chlorine-releasing bleaching agent, for example calcium hypochlorite or a mixture of chlorine releasing salts such as sodium chloride and potassium monopersulphate. The use of a suitable chlorine releasing bleaching agent is especially useful in the composition of this invention where a pigment is used as colouring material, because such bleaching agents do not so readily remove the colour from pigments, whereas they would remove the colour from dyestuffs.

The disinfectant may also be a halogeno-hydroxy-diphenylether of the general formula:—



where p is a whole number from 1 to 5, Hal represents a halogen atom and, where p is greater than 1 such halogen atoms may be the same or different, corresponding compounds in which one or both of the benzene rings A and B further contain substituents selected from alkyl groups of 1 to 4 carbon atoms, halogenated alkyl groups of 1 to 4 carbon atoms, alkoxy groups of 1 to 4 carbon atoms, cyano, allyl, amino and acetyl groups, and corresponding compounds to any of these in which the indicated hydroxy group is acylated.

The disinfectant is preferably 2,4,4'-trichloro - 2' - hydroxy diphenyl ether. Other disinfectants which may be used are

halogenated alkyl phenols, quaternary ammonium compounds or chlor-substituted bisphenols such as hexachlorophene.

5 The amount of pigment used depends on the depth of shade required in the water of the lavatory bowl.

10 The pigment is preferably a stable organic pigment and an example of a pigment that may be used is a phthalocyanine green or blue. The pigment may be dispersed in an anionic or nonionic surfactant which may, if desired, be one or other or a combination of the surfactant materials in the composition. If desired a mixture of pigment and dyestuff may be used.

20 The composition of the present invention may, if desired, contain other active ingredients: 0 to 5% by weight optical brightening agent: 0 to 35% by weight of a sequestering agent: 0 to 35% by weight of a corrosion inhibitor: fungicides, enzymes, builders or fillers may also be present. Builders or fillers are generally of an inorganic nature, and serve mainly to increase the bulk of the block without contributing in any great measure to the properties thereof. Examples of builders or fillers are alkali metal polyphosphates, carbonates, borates, bicarbonates, chlorides and sulphates, carboxymethyl cellulose, polyvinyl alcohol, clays and siliceous earths. The builders may be used in amounts up to 50% by weight of the composition. Although a perfume is unnecessary, small amounts of perfume may be added if desired, e.g. less than 1% by weight calculated on the total weight of the composition.

Any perfume that is used should be substantially insoluble in water.

45 Examples of fungicides that may be present in the composition are panacide and dichlorophene.

50 If desired the composition may contain one or more odour counteractants. These substances are blends of essential oils and are not perfumes but have the effect of counteracting or reducing the perceived intensity of any malodour. They are prepared from natural and synthetic oils e.g. pine or lemon by methods known to those skilled in the art. The odour counteractants may conveniently be used in amounts of from 0.5% to 1.5% preferably about 1% by weight based on the weight of the composition. Examples of odour counteractants are those sold under the Trade Names Airkem Product 503 and Airkem Phase A 305. ("Airkem" is a Registered Trade Mark).

65 The composition of the present invention may be immersed freely in the water of the cistern or if desired it may be suspended in

the water of the cistern by any conventional method. If desired, the pigment may be separated from the disinfectant, particularly a bleaching agent, by using a two-part container.

70 The pigment may, if desired, be predispersed in an anionic or nonionic surfactant before incorporation into the composition of the invention. Such dispersions are commercially available and are intended primarily for the mass colouration of water-based emulsion paints, paper or synthetic fibres. Examples of such pigment compositions are those sold under the Registered Trade Marks Irgalite Blue CPV2, Irgalite Blue CPV3, Irgalite Green CPV4, Irgalite Yellow CPV2A and Irgalite Yellow CPV4

85 Conveniently the pigment may be predispersed in one or other or a combination of the surfactant materials of the cleaning composition of the present invention before incorporation into the composition. The dispersion may be incorporated in the composition of the present invention by conventional low energy blending equipment, such as a paddle or anchor stirrer.

90 Alternatively, a pigment powder or presscake may be dispersed into the cleaning composition by means of a kneader, two-roll mill or attriter.

95 The composition of the present invention may be formed into tablet blocks by conventional methods, for instance, by moulding or by compressing in a tablet press.

100 The following Examples further illustrate formulations of the present invention in which the percentages are by weight.

Example 1

A formulation of the present invention was made up from the following ingredients:

- 45% of an ethoxylated cetyl stearyl alcohol containing an average of 6 ethylene oxide units per mole (biodegradable hydrophobe) 110
- 45% of an ethoxylated cetyl stearyl alcohol containing an average of 50 ethylene oxide units per mole (surfactant) 115
- 5% calcium hypochlorite and
- 5% Pigment Blue 15:3 C.I. No. 74160 (Irgalite Blue CPV2).

Example 2

120 A formulation of the present invention was made up from the following ingredients:

- 25% of a coconut mono-alkanolamide sold by Lankro Chemicals under the Trade Mark Ethylan LM } biodegradable

- 16% of coconut diethanol-
amide sold by Lankro
Chemicals under the
Trade Mark Ethylan LD } hydro-
phobe
50% ethoxylated tallow alcohol containing
an average of 50 ethylene oxide units
per mole (surfactant).
5 4% Pigment Blue 15:3 C.I. 74160 (Irgalite
Blue CPV2)
5% calcium hypochlorite.

Example 3

- A formulation was made up from the
following ingredients:
90% of an ethoxylated cetyl stearyl alcohol
containing an average of 6 ethylene
oxide units per mole (biodegradable
hydrophobe).
15 5% of tetradecyl benzene sulphonate
(surfactant)
5.0% Pigment Blue 15:1 C.I. No. 74160
(Irgalite Blue CPV3).

Example 4

- A formulation was made up from the
following ingredients:
70% of an ethoxylated cetyl stearyl alcohol
containing an average of 6 ethylene
oxide units per mole (biodegradable
hydrophobe).
25 15% of dodecyl benzene sulphonate
(surfactant)
10% Pigment Blue 15:1 C.I. No. 74160
(Irgalite Blue CPV3)
30 5% calcium hypochlorite.

Example 5

- A formulation was made up from the
following ingredients:
45% of an ethoxylate of an ethoxylated cetyl
stearyl alcohol containing an
average of 6 ethylene oxide per mole
(biodegradable hydrophobe)
35 45% of isooctyl benzene sulphonate
(surfactant)
40 5% 2,4,4'-trichloro-2'-hydroxy diphenyl
ether
5% Pigment Blue 15:3 C.I. No. 74160
(Irgalite Blue CPV3).

Example 6

- A formulation was made up from the
following ingredients:
60% of an ethoxylated cetyl stearyl alcohol
containing an average of 6 ethylene
oxide units per mole (biodegradable
hydrophobe).
50 30% of an ethoxylated decyl alcohol
containing an average of 40 ethylene
oxide units per mole (surfactant)
2.5% 2,4,4'-trichloro-2'-hydroxy-
diphenyl ether
55

- 7.5% Pigment Blue 15:3 C.I. No. 74160
(Irgalite Blue CPV3).

Example 7

A formulation was made up from the
following ingredients:

- 45% of an ethoxylated cetyl stearyl alcohol
containing an average of 6 ethylene
oxide units per mole (biodegradable
hydrophobe).
45% of an ethoxylated dodecyl alcohol
containing an average of 50 ethylene
oxide units per mole (surfactant).
2% of 2,4,4'-trichloro-2'-hydroxy- diphenyl
ether (disinfectant).
0.5% perfume oil
7.5% Pigment Blue 15:3 C.I. No. 74160
(Irgalite Blue CPV3).

Example 8

A formulation was made up from the
following ingredients:

- 25% of an ethoxylated cetyl stearyl alcohol
containing an average of 6 moles of
ethylene oxide.
45% of a coconut monoethanolamide.
10% of an ethylene oxide-propylene oxide
co-polymer sold by Lankro
Chemicals under the trade mark
Monolan 8000E/80
8% of Pigment Blue 15:3 C.I. No. 74160
(Irgalite Blue CPV2)
12% of p-Dichlorobenzene.

Example 9

A formulation was made up from the
following ingredients:—

- 25% of an ethoxylated cetyl stearyl alcohol
containing an average of 6 moles of
ethylene oxide.
45% of a coconut monoethanolamide
15% of an ethylene oxide-propylene oxide
co-polymer sold by Lankro
Chemicals under the trade mark
Monolan 8000E/80
5% of Pigment Blue 15:3 C.I. No. 74160
(Irgalite Blue CPV2)
5% of p-Dichlorobenzene
5% of diethyl phthalate.

WHAT WE CLAIM IS:—

1. A composition for cleaning lavatory
bowls or urinals which comprises:

- a) from 1% to 95% by weight, calculated
on the total weight of the composition,
of a hydrophobic agent or mixture of
hydrophobic agents,
b) from 5% to 95% by weight calculated
on the total weight of the composition
of a hydrophilic surfactant or mixture
of hydrophilic surfactants as
hereinbefore defined,
c) from 0 to 35% by weight calculated on
the total weight of the composition, of

- a disinfectant or mixture of disinfectants which is compatible with the constituents of the composition, and
- 5 d) from 1 to 15% by weight calculated on the total weight of the composition, of a pigment suitably dispersed throughout at least components a) and b) of the composition.
- 10 2. A composition as claimed in Claim 1 in which the hydrophobic agent is present in an amount of from 5% to 60% based on the total weight of the composition.
- 15 3. A composition as claimed in Claim 1 or Claim 2 in which the hydrophobic agent is biodegradable.
- 20 4. A composition as claimed in any of the preceding claims in which the hydrophobic agent is a low ethoxylate of an aliphatic alcohol containing from 8 to 24 carbon atoms and containing on average up to 8 ethylene oxide units per mole.
- 25 5. A composition as claimed in any of the preceding claims in which the hydrophobic agent is an ethoxylated cetyl stearyl alcohol containing an average of 6 ethylene oxide units per mole.
- 30 6. A composition as claimed in any of Claims 1 to 3 in which the hydrophobic agent is an alkanolamide of a fatty acid.
7. A composition as claimed in Claim 6 in which the fatty acid moiety of the alkanolamide contains from 8 to 20 carbon atoms per molecule.
- 35 8. A composition as claimed in Claim 6 or Claim 7 in which the alkanolamide of the fatty acid is coconut monoethanolamide.
9. A composition as claimed in Claim 6 or Claim 7 in which the alkanolamide of the fatty acid is coconut diethanolamide.
- 40 10. A composition as claimed in any of the preceding claims in which the hydrophilic surfactant is used in an amount of from 20% to 95% by weight calculated on the total weight of the composition.
- 45 11. A composition as claimed in any of the preceding claims in which the surfactant is a straight or branched chain alkyl aryl sulphonate containing from 8 to 22 carbon atoms in the alkyl group.
- 50 12. A composition as claimed in any of Claims 1 to 10 in which the surfactant is an ethoxylate of a fatty alcohol wherein the ethoxylate moiety contains more than 16 ethylene oxide units per mole.
- 55 13. A composition as claimed in Claim 12 in which the surfactant is a lauryl alcohol ethoxylate, a cetyl alcohol ethoxylate, an oleyl alcohol ethoxylate or a commercially available mixture of these ethoxylates.
- 60 14. A composition as claimed in Claim 11 in which the surfactant is an ethyleneoxide-propylene oxide copolymer.
15. A composition as claimed in any of the preceding claims in which the amount of disinfectant is up to 5% by weight calculated on the total weight of the composition.
- 65 16. A composition as claimed in any of the preceding claims in which the disinfectant is calcium hypochlorite or a mixture of sodium chloride and potassium monopersulphate.
- 70 17. A composition as claimed in any of Claims 1 to 15 in which the disinfectant is 2,4,4' - trichloro - 2 - hydroxy - diphenyl ether.
- 75 18. A composition as claimed in any of the preceding claims in which the pigment is a phthalocyanine green or blue.
- 80 19. A composition as claimed in any of the preceding claims in which a dyestuff may also be added.
20. A composition as claimed in any of the preceding claims which also contains one or more of the following ingredients: 0 to 5% by weight optical brightening agent, 0 to 35% by weight sequestering agent, 0 to 35% by weight corrosion inhibitor, fungicides, enzymes, odour counteractants and up to 50% by weight of a builder or filler.
- 85 21. A composition as claimed in Claim 1 substantially as described in any of Examples 1 to 9.
- 90 22. A composition as claimed in any of the preceding claims in which the pigment is separated from the disinfectant by using a two-part container.
23. A method of preparing a composition according to any of the preceding claims which comprises predispersing the pigment in an anionic or nonionic surfactant before incorporation into the composition.
- 95 24. A method of preparing a composition according to any of Claims 1 to 22 which comprises predispersing the pigment in one or other or a combination of the surfactant materials of the cleaning composition before incorporation into the composition.
- 100 25. A method as claimed in Claim 23 or Claim 24 in which the dispersion of the pigment is incorporated into the composition by a paddle or anchor stirrer.
- 105 26. A method of preparing a composition according to any of Claims 1 to 22 which comprises dispersing a pigment powder or presscake into the composition by means of a kneader, two-roll mill or attriter.
- 110 27. A composition as claimed in any of Claims 1 to 22 whenever prepared by a method as claimed in any of Claims 23 to 26.
- 115 28. A method of forming the composition according to any of Claims 1 to 22 and 27 into a tablet block by moulding or compressing in a tablet press.
- 120 125

29. A tablet block whenever prepared by a method as claimed in Claim 28.

- 5 30. A method of cleaning lavatory bowls or urinals which comprises introducing into the flushing cistern a composition as claimed in any of Claims 1 to 22, 27 and 29.

T. SHARMAN,
Agent for Applicants,
Ciba-Geigy (UK) Limited,
Simonsway,
Manchester M22 5LB.

Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1979
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.

PATENTS ACT 1949

SPECIFICATION NO 1538857

The following amendments were allowed under Section 29 on 28 November 1979

Page 2, *delete* lines 11 to 13 *insert* such as paraffin waxes or microcrystalline waxes;

THE PATENT OFFICE
10 January 1980

Bas 73233/10